3 Design

3.1 Design Context

3.1.1 Broader Context

Describe the broader context in which your design problem is situated. What communities are you designing for? What communities are affected by your design? What societal needs does your project address?

Hinkley Medical is a small startup that has a fully functional product, and has recently begun to market it to consumers. Currently, all shipment, inventory, and warranty tracking is done manually through Microsoft Excel. This is highly inefficient, and does not facilitate the consumer being able to view or manage their own products for information. This project specifically targets Hinkley Medical employees in order to make their lives easier and to provide ready access to consumers regarding product information.

List relevant considerations related to your project in each of the following areas:

Area	Considerations
Public health, safety, and welfare	Our inventory system will save HM employees time by streamlining the shipment receiving and assembly tracking processes.
Global, cultural, and social	N/A
Environmental	N/A
Economic	Our Infrastructure App will increase productivity and save the company worker-hours that would otherwise be used to manually track inventory and warranty status.

3.1.2 User Needs

List each of your user groups. For each user group, list a needs statement in the form of:

<u>User group</u> needs (a way t0) <u>do something (i.e., a task to accomplish, a practice to implement, a way to be)</u> because <u>some insight or detail about the user group</u>.

PARAMEDIC needs a way to SUBMIT A CUSTOMER SERVICE REQUEST because PRODUCT BROKE.

DEPARTMENT HEAD needs a way to ORDER REPLACEMENT PARTS because PRODUCT BROKE.

ADMIN needs a way to CHANGE PART CATALOG because PART NUMBER/SOURCE CHANGED.

EMPLOYEE needs a way to TRACK INVENTORY because HE/SHE NEEDS TO KNOW WHEN TO ORDER MORE PARTS.

3.1.3 Prior Work/Solutions

Include relevant background/literature review for the project

– If similar products exist in the market, describe what has already been done

– If you are following previous work, cite that and discuss the **advantages/shortcomings**

– Note that while you are not expected to "compete" with other existing products / research groups, you should be able to differentiate your project from what is available. Thus, provide a list of pros and cons of your target solution compared to all other related products/systems.

Detail any similar products or research done on this topic previously. Please cite your sources and include them in your references. All figures must be captioned and referenced in your text.

When looking at other examples for page layout we find many examples online that we can follow along with, and these help a ton. Have a template design that someone says work really well and they explain every part of the design they created it is easy for us as a group to take that and change it to our liking and using it as a base line.

3.1.4 Technical Complexity

Provide evidence that your project is of sufficient technical complexity. Use the following metric or argue for one of your own. Justify your statements (e.g., list the components/subsystems and describe the applicable scientific, mathematical, or engineering principles)

1.   The design consists of multiple components/subsystems that each utilize distinct scientific, mathematical, or engineering principles –AND–

2.   The problem scope contains multiple challenging requirements that match or exceed current solutions or industry standards.

      With our project being software based their are always ways that we can improve code that we find helpful and can use for ourselves. For front end we are using Javascript react with backend on AWS and with these two components we are creating from the ground up a system that Hinkley Medical can use in day to day life. What they asked of use was to create many different aspects of the website everything ranging from inventory, shipment, profile, assembly and much more. Each of these components are very different from each other and require a different way of thinking on how we are to create them.

3.2 Design Exploration

3.2.1 Design Decisions

List key design decisions (at least three) that you have made or will need to make in relation to your proposed solution. These can include, but are not limited to, materials, subsystems, physical components, sensors/chips/devices, physical layout, features, etc.

1) Using AWS as backend was a very smart choice as it is easy to create and use for our project.
2) Having a overall design layout of what each page is going to look like as a template.
3) Using widgets in our pages make them look more professional and gives it more ease of use which is always smart to have.

3.2.2 Ideation

For one design decision, describe how you ideated or identified potential options (e.g., lotus blossom technique). List at least five options that you considered.

WE came to widgets from many different ideas:

1) Drop down menu
2) color coordinated parts
3) Pop up window
4) Seperate page loading

5) All info displayed without having to press a button.

3.2.3 Decision-Making and Trade-Off

Demonstrate the process you used to identify the pros and cons or trade-offs between each of your ideated options. You may wish you include a weighted decision matrix or other relevant tool. Describe the option you chose and why you chose it.

1. Drop down menu:
    a. Pros: Easy access for menu
    b. Cons: If too many options could confuse client
2. Color coordinated Parts:
    a. Pros: Easier to see certain things like titles/menus
    b. Cons: Too many colors could confuse client
3. Pop up window:
    a. Pros: Clears up space and makes it less cluttered
    b. Cons: Might be annoying for the client (new window may cause performance issues)
4. Separate Page Loading:
    a. Pros: Clears up space like a pop up window and makes it less cluttered
    b. Cons: May cause performance issues
5. All info displayed without having to press a button
    a. Pros: Easy access for information needed
    b. Cons: Could be overwhelming to look at

3.3 Proposed Design

Discuss what you have done so far – what have you tried/implemented/tested?

So far we have worked on creating the frame for our site, being able to create an account and log-in. We have started working on an inventory page that keeps track of all of the parts in the inventory and a shipment page that will manage shipments.

3.3.1 Design Visual and Description

Include a visual depiction of your current design. Different visual types may be relevant to different types of projects. You may include: a block diagram of individual components or subsystems and their interconnections, a circuit diagram, a sketch of physical components and their operation, etc.

1# Log in and sign up pop-up.
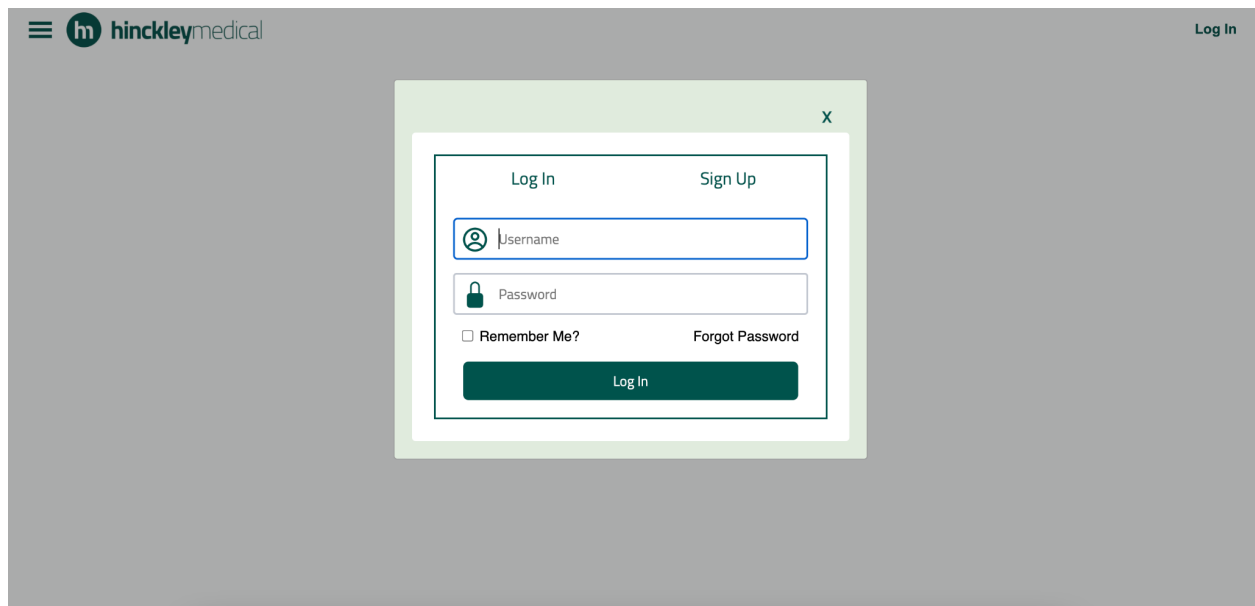
#2 Shipment page

Shipments

Export to Excel | + New Order

Search here...

Date | Filters

Batch No	Part Name	Date	Supplier	Labels	Quantity	Status
OL1000-1	PWS-100A	Sun Mar 27 2022	Perrin	Overlays	40	Pending
LCD100-1	LCD	Sun Mar 27 2022	Perrin	Overlays	40	Completed

hello, frame 1

| MB1000-1 | Main Board | Sun Mar 27 2022 | Perrin | Overlays | 40 | Overdue |

#3 Inventory page

Inventory

+ Create

Search here...

Filters

Part Number	Part Name	Full System Quantity	Type	Inventory Status
123.456.789	PWS-100A	2	Electrical	Low
987.654.321	LCD	0	Electrical	Out
135.792.468	Main Board	40	Hardware	Full
123.456.789	PWS-100A	2	Electrical	Low
987.654.321	LCD	0	Electrical	Out
135.792.468	Main Board	40	Hardware	Full
123.456.789	PWS-100A	2	Electrical	Low
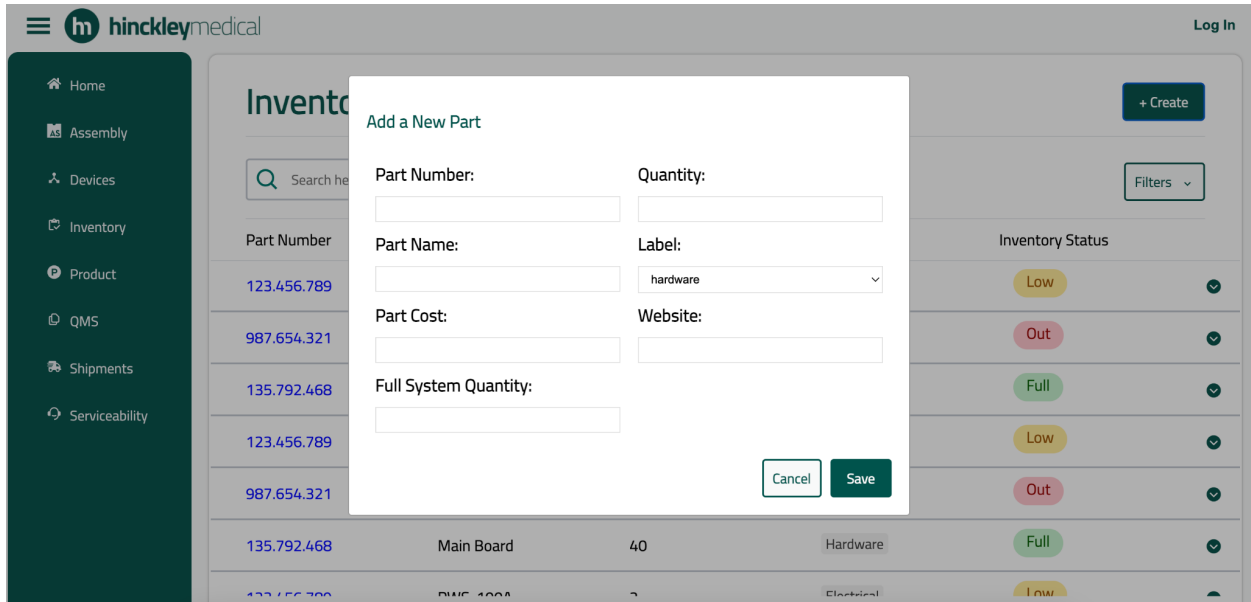
Describe your current design, referencing the visual. This design description should be in sufficient detail that another team of engineers can look through it and implement it.

The first screenshot(#1) is our implementation of the logging and signing up feature. There is a button in the top right corner of the site for logging in. After logging in there will be a profile tab in place of the log in button.

The second screenshot(#2) shows the site's sidebar which is able to slide in and out when clicking on the menu button next to the Hinckley medical logo. Each page has a separate button inside of this sidebar. In this screenshot, we are on the shipment page. Each shipment is displayed with characteristics displayed for each. Each shipment has a dropdown displayed when clicking on it. Currently, the dropdown just displays "Hello frame" but it will eventually display more details about each shipment. Currently, all of the shipments are hardcoded but features like new order, search, and filters will be implemented. Export to Excel button will be to take all of the shipments and allow to download them in excel format.

The third screenshot(#3) is our implementation of the inventory page. The inventory page has similar characteristics as the shipment page. Each part is displayed and has a dropdown for each that will display more information about each. The inventory page has a popup to create new parts but it will need to be connected to our AWS backend.

3.3.2 Functionality

Describe how your design is intended to operate in its user and/or real-world context. This description can be supplemented by a visual, such as a timeline, storyboard, or sketch.

Our design will be used to supplement the sponsor company and assist them in organizing their current systems such as inventory, shipment, and assembly.

How well does the current design satisfy functional and non-functional requirements?

The current design includes every functional requirement given by Hinckley medical. It also features many non-functional requirements that will enhance the experience of using the site. Some of these include a moving sidebar that is able to hide when staying on one page and other dropdowns that can be hidden to provide a clean user experience without unnecessary distractions.

3.3.3 Areas of Concern and Development

Based on your current design, what are your primary concerns for delivering a product/system that addresses requirements and meets user and client needs?

That the product might not meet the requirements that they are looking for in the inventory and ordering of parts of the project.

What are your immediate plans for developing the solution to address those concerns? What questions do you have for clients, TAs, and faculty advisers?

The immediate plans are to organize the project into the required tasks so there won't be any missed requirements. We use Jira to organize all of the tasks that we are required to work on. Also share major project achievements with our client and allow them to provide feedback.

NOTE: The following sections will be included in your final design document but do not need to be completed for the current assignment. They are included for your reference. If you have ideas for these sections, they can also be discussed with your TA and/or faculty adviser.

3.4 Technology Considerations

Highlight the strengths, weaknesses, and trade-offs made in technology available.

Discuss possible solutions and design alternatives

3.5 Design Analysis

– Did your proposed design from 3.3 work? Why or why not?

We have not finished and tested our design so far. So it is very speculative at the moment. In theory, our design should work since it will help the client organize most of their inventory and part details in one area on the web.

– What are your observations, thoughts, and ideas to modify or iterate over the design?

As previously mentioned, our main idea is to create a inventory system for Hinckley Medical and we tried a lot of designs for our pages. We are constantly trying to make the UI easy to use and fluid to the over design.

3.6 Design Plan

Describe a design plan with respect to use-cases within the context of requirements, modules in your design (dependency/concurrency of modules through a module diagram, interfaces, architectural overview), module constraints tied to requirements.